## Appendix H

Appendix H:

**RONS & MMS** 

Alternative A: Projects that will require significant funding

\*RONS – Refuge Operating Needs System – a database that reflects what refuges need to accomplish projects. Projects are ranked by Region and Washington, and funded as funds are available.

\*\*K means thousands of dollars, M means Millions of dollars.

Project/Strategy	Goal/Program/ Objective	First year cost	Cyclic cost and Interval	Duration	Additional Staff Needed	Funding Source
Maintain 2000 acres of Pine- Pocoson with fire every 3-5 years	Habitat/Forest Mgmt/ Pine Pocosin	N/A	\$90K** every 3-5 years.	15	N/A	Fire
Reintroduce Red-cockaded Woodpeckers (RCW) to the refuge and monitor (2,000 ac)	Trust Resources/ RCW/ Reintroduce RCW's		5K every 3 years	15		Endangered species
Monitor black bear population in cooperation with state wildlife agencies and universities (already in RONS* database)	Trust Resources/ Black Bear/Maintain healthy population	\$100K	\$100K annually	5		RONS and challenge cost share
Acquire remaining properties within acquisition boundary as they become available (4,000 acres) Survey and post boundary	Land Protection/ Habitat protection/ Protect and restore	N/A	\$6 M over the 15 years + 54K for survey	15		Migratory Bird Conservation Fund, LWCF

Alternative B: Projects that will require significant funding and/or additional staff

Project/ Strategy	Goal/ Program/ Objective	First Year Cost (not including recurring cost) Including staff hires (not salary)	Cyclic Cost and Interval	Dura tion	Additional Staff Needed (not cumulative)	Funding Source
Utilize approved herbicides on 6,000 acres on stands that are not easily accessible by harvesting equipment	Habitat/ Forest Mgmt/ Atlantic white cedar (AWC)	\$75K for GS-11 Forester and GS-7 Forestry Tech hire	400 ac/year @ \$100/acre + monitoring = 15K to 40K per year	15	Refuge funded Forester and Forestry Tech	RONS, Fire
Implement hardwood removal and prescribed burning on 10,000 acres to improve habitat for RCW	Habitat/ Forest Mgmt/ Pine- Pocosin	Forester hires covered above	Year 1-3 – Treat 2000 ac Year 4 Burn 2000 ac (90K) Year 4-6 – Treat 2000 ac Year 7 – Burn 4000 ac (180K) etc.	15	Refuge funded Forester and Forestry Tech	RONS, Fire
Restore additional 220 acres of Remnant Marsh habitat by mechanical clearing and prescribed burning	Habitat/ Forest Mgmt/ Remnant Marsh	Forester hires covered above	Year 1-4 150 acres cleared x \$1.8K/ac = \$270K, burn every 3-5 years at \$70/ac = 6- 20K	15	Refuge funded Forester and Forestry Tech	RONS, Fire
Develop GIS surface flooding models to provide continuous assessment of water mgmt. strategies on wildlife and habitat	Habitat/ Water Mgmt	\$75 K for GS-9 Biologist and GS-7 Biotech hire	\$200K for study	5	Biologist and Biotech	RONS, partners
Reintroduce RCW's to Refuge and State Park and monitor (10,000 ac)	Trust Resources/ RCW/ Reintroduce RCW's on 10K acres	Biologist hires covered above	10K every 3 years	15	Biologist and Biotech	RONS, partners

Develop Clearings of 5-10 ac using tree girdling or small clearcuts for neotropical mig. Birds	Trust Resources/ Neotropical Migratory Birds/ Establish focus area	Biologist/Forester hires covered above	10K per year for Smithsonian Institute monitoring and interns or temps to treat the sites	15	Biologist, Biotech, Forester, Forestry Tech	RONS, Challenge Cost Share, partners
Monitor black bear population in cooperation with state wildlife agencies and universities (same as Alt. A, except there would be staff available to assist in Alt. B)	Trust Resources/ Black Bear/ Maintain healthy population	Biologist hires covered above	\$100K per year	5	Biologist, Biotech	RONS
Acquire remaining properties within acquisition boundary as they become available (4,000 acres) Survey and post boundary	Land Protection/ Habitat Protection and Restoration/ Protect and Restore	N/A	\$6 M over the 15 years + 54K for survey	15		Migratory Bird Conservati on Fund
Resolve boundary disputes, post the refuge boundary, patrol and inspect – approx. 100 miles need surveyed and posted	Land Protection/ Habitat Protection and Restoration/ Protect and Restore	50K to hire Supervisory Refuge Operations Specialist (SROS)	Survey and Post 20 miles/year for 5 years = 108K/year Maintain it annually	15	Supervisory Refuge Operations Specialist	RONS
Purchase land at Jericho Lane for an environmental education site	Public Use/ Environment al Education (EE)/ Provide quality EE programs	357K for land purchase	Cyclic cost will depend upon available funds and willing sellers	5-15		Migratory Bird Conservati on Fund, TEA 21 or LWCF, partners
Purchase and replenish field study equipment and teacher training equipment, set up teacher library, present at conferences	Public Use/ Environment al Education/ Provide quality EE programs	150K for initial equipment purchase 50K for Outdoor Recreation Planner- EE	30K/ year to maintain and replenish	15	Outdoor Recreation Planner - EE	RONS
Host annual events – four per year	Public Use/ Interpretatio n/ Provide	50K for tents, blue goose suit, displays, activities materials etc.	15K/ year to update, hire first person	15	Outdoor Recreation Planner	RONS, partners, grants

	quality interpretive experiences		interpreters, etc.			
Develop new panels, kiosks for Suffolk, Chesapeake, Sunbury, Dismal Swamp Canal Welcome Center	Public Use/ Interpretatio n/ Provide quality interpretive experiences	150 K for new kiosks, etc	5K/ year for maintenance	15	Outdoor Recreation Planner	RONS, MMS, partners
Pave major vehicle access roads and Parking Lots	Public Use/ Wildlife Observation/ Provide opportunities for refuge visitors to view wildlife	SROS hire covered above; Washington Ditch = 1,019K; Jericho Lane = 1,894K; Railroad/West/ Interior = 4,474K	Costs would likely be spread over several years. Annual maintenance would be reduced.	15	Supervisory Refuge Operations Specialist	RONS, TEA-21
Purchase and operate visitor tram on Railroad/West/Inte rior (Alternative fuel)	Public Use/Wildlife Observation/ Provide opportunities for visitors to view wildlife	150K	5-10K/ year maintenance	15	Already include/ concessiona ire operated	RONS, Challenge cost share
Construct observation tower at Lake Drummond and platform at Railroad/West Marsh	Public Use/ Wildlife Observation/ Provide opportunities for refuge visitors to view wildlife	250K		1	Supervisory Refuge Operations Specialist	RONS, TEA -21
Develop foot- bridge system across Dismal Swamp Canal and boardwalk trail along the Feeder Ditch to Lake Drummond	Public Use/ Wildlife Observation/ Provide opportunities for refuge visitors to view wildlife	SROS hire covered above. Bridge 1M, 4.4 miles of Boardwalk trail = 4.2M	Costs would likely be spread over several years. Annual maintenance = 30-50K	15	Supervisory Refuge Operations Specialist	RONS, TEA-21
Acquire Corapeake Road ROW and pave Auto tour route	Public Use/ Wildlife Observation/ Provide opportunities for refuge visitors to view wildlife	SROS hire covered above. ROW = 0.9 miles, 50' wide @ 2K/ac = 5.14 ac x 2K = 10.28K; Pave 12 miles at 1.5 lanes = 685K/mile = 8.2M; Road prep @ 50K/mile x 12 miles = 600K	Costs would be spread over several years. Annual maintenance would be reduced.	15	Supervisory Refuge Operations Specialist	RONS, TEA-21
Expand Volunteer Program	Public Use/ Volunteers/ Provide opportunities for people to donate their	50K to purchase materials  50K to hire Outdoor Recreation Planner - Volunteers	50K/year to send volunteers to training, purchase materials,	15	Outdoor Recreation Planner - Volunteers	RONS, grants, partners

	time		hold annual recognition event			
Convert existing refuge headquarters on Desert Road to Visitor Service Center. Construct road to link parking lot to Railroad Ditch Road	Public Use/ Facilities for Visitor Services/ Visitor Facilities	50K to hire Outdoor Recreation Planner. 500K to construct ¼ mile paved road; 200K to retrofit building including new paint, carpet, etc.		1	Supervisory Refuge Operations Specialist, Outdoor Recreation Planner	RONS, MMS
Establish Administrative HQ and Visitor Center on US Highway 17 in Chesapeake, VA	Public Use/ Facilities for Visitor Services/ Visitor Facilities	100K to hire Outdoor Recreation Planner (ORP) – Director of Visitor Services, one additional ORP and a Recreation Aid. 10,000 sq ft for Visitor Facility and exhibits @ \$264/sqft and 150/sqft for exhibits = 2.6M +1.5M = 4.1M. HQ = 5000 sq ft @ \$260/sqft + 15% for furniture = 1.3M + 195K.	Operations and Maintenance would be 40K/ year	15	Outdoor Recreation Planner and a Recreation Aid	Constructio n, RONS, partners, Corporate
Establish a visitor contact station with exhibits at the Refuge Operations Center in Sunbury, NC	Public Use/ Facilities for Visitor Services/ Visitor Facilities	50K to hire Outdoor Recreation Planner; 150K for exhibits, 200 K to move staff from Desert Rd. HQ to Sunbury building	Operations and Maintenance would be 20K/year; lease would be 60K/ year	15	Outdoor Recreation Planner	RONS, partners

## Alternative C: Projects that will require significant funding and/or additional staff

Project/Strategy	Goal/Program /Objective	First Year Cost Including Staff Hires, but not salary	Cyclic Cost and Interval	Duration	Additional Staff Needed (not cumulativ e)	Funding Source
Reintroduce Red- cockaded Woodpeckers (RCW) to the refuge and monitor (2,000 ac) SAME AS A	Trust Resources/ RCW/ Reintroduce RCW's		5K every 3 years	15	,	Endanger ed Species
Monitor black bear population in cooperation with	Trust Resources/ Black	\$100K	\$100K annually	5		RONS and Challeng

state wildlife agencies and universities (already in RONS database, SAME AS A)	Bear/Maintain healthy population					e Cost Share
Acquire remaining properties within acquisition boundary as they become available (4,000 acres) Survey and post boundary; SAME AS A	Land Protection/ Habitat protection/ Protect and restore		\$6 M over the 15 years + 54K for survey	15		Migratory Bird Conserva tion Fund
Resolve boundary disputes, post the refuge boundary, patrol and inspect – approx. 100 miles need surveyed and posted	Land Protection/ Habitat Protection and Restoration/ Protect and Restore	50K to hire Supervisory Refuge Operations Specialist (SROS)	Survey and Post 20 miles/year for 5 years = 108K/year Maintain it annually	15	Superviso ry Refuge Operation s Specialist	RONS
Develop environmental education site at Jericho Lane	Public Use/ Environmenta I Education (EE)/ Provide quality EE programs	357K for land purchase	10K	5-15		Migratory Bird Conserva tion Fund, TEA 21 or LWCF, partners
Purchase and replenish field study equipment and teacher training equipment, set up teacher library, present at conferences	Public Use/ Environmenta I Education/ Provide quality EE programs	150K for initial equipment purchase 50K for Outdoor Recreation Planner- EE	30K/ year to maintain and replenish	15	Outdoor Recreatio n Planner - EE	RONS
Host annual events – four per year	Public Use/ Interpretation/ Provide quality interpretive experiences	50K for tents, blue goose suit, displays, activities materials etc.	15K/ year to update, hire first person interpreters, etc.	15	Superviso ry Refuge Operation s Specialist	RONS
Develop new panels, kiosks for Suffolk, Chesapeake, Sunbury, Dismal Swamp Canal Welcome Center	Public Use/ Interpretation/ Provide quality interpretive experiences	150 K for new kiosks, etc	5K/ year for maintenance	15	Outdoor Recreatio n Planner	RONS, Annual Maintena nce
Pave major vehicle access roads and Parking	Public Use/ Wildlife Observation/	SROS hire covered above; Washington Ditch = 1,019K;	Costs would likely be spread over	15	Superviso ry Refuge Operation	RONS, TEA-21

Lots	Provide opportunities for refuge visitors to view wildlife	Jericho Lane = 1,894K; Railroad/West/ Interior = 4,474K	several years. Annual maintenance would be reduced.		s Specialist	
Purchase and operate visitor tram on Railroad/West/Inte	Public Use/ Wildlife Observation/ Provide opportunities for refuge visitors to view wildlife	150K	5-10K/ year maintenance	15	Already included/ concessio naire operated	RONS, Challeng e cost share
Construct observation tower at Lake Drummond and platform at Railroad/West Marsh	Public Use/ Wildlife Observation/ Provide opportunities for refuge visitors to view wildlife	250K		1	Superviso ry Refuge Operation s Specialist	RONS, TEA-21
Develop foot- bridge system across Dismal Swamp Canal and boardwalk trail along the Feeder Ditch to Lake Drummond	Public Use/ Wildlife Observation/ Provide opportunities for refuge visitors to view wildlife	SROS hire covered above. Bridge 1M, 4.4 miles of Boardwalk trail = 4.2M	Costs would likely be spread over several years. Annual maintenance = 30-50K	15	Superviso ry Refuge Operation s Specialist	RONS, TEA-21
Acquire Corapeake Road ROW and pave Auto tour route	Public Use/ Wildlife Observation/ Provide opportunities for refuge visitors to view wildlife	SROS hire covered above. ROW = 0.9 miles, 50' wide @ 2K/ac = 5.14 ac x 2K = 10.28K; Pave 12 miles at 1.5 lanes = 685K/mile = 8.2M; Road prep @ 50K/mile x 12 miles = 600K	Costs would be spread over several years. Annual maintenance would be reduced.	15	Superviso ry Refuge Operation s Specialist	RONS, TEA-21
Expand Volunteer Program	Public Use/ Volunteers/ Provide opportunities for people to donate their time	50K to purchase materials 50K to hire Outdoor Recreation Planner - Volunteers	50K/year to send volunteers to training, purchase materials, hold annual recognition event	15	Outdoor Recreatio n Planner - Volunteer s	RONS, grants, partners
Convert existing refuge headquarters on Desert Road to Visitor Service Center. Construct road to link parking lot to	Public Use/ Facilities for Visitor Services/ Visitor Facilities	50K to hire Outdoor Recreation Planner. 500K to construct ¼ mile paved road; 200K to retrofit building including new paint, carpet, etc.		1	Superviso ry Refuge Operation s Specialist, Outdoor Recreatio n Planner	RONS, MMS

Railroad Ditch Road						
Establish Administrative HQ and Visitor Center on US Highway 17 in Chesapeake, VA	Public Use/ Facilities for Visitor Services/ Visitor Facilities	100K to hire Outdoor Recreation Planner (ORP) – Director of Visitor Services, one additional ORP and a Recreation Aid. 10,000 sq ft for Visitor Facility and exhibits @ \$264/sqft and 150/sqft for exhibits = 2.6M +1.5M = 4.1M. HQ = 5000 sq ft @ \$260/sqft + 15% for furniture = 1.3M + 195K.	Operations and Maintenance would be 40K/ year	15	Outdoor Recreatio n Planner and a Recreatio n Aid	Construct ion, RONS, partners, Corporat e

Maintenance Management System Projects Great Dismal Swamp National Wildlife Refuge \*First two numbers designate fiscal year that project was first entered. 93 means 1993. 00 means 2000.

Project No.	Project Name	Cost Estimate (\$1000's)
93031*	Replace five unsafe foot bridges	\$104
01019	Replace Terrain King Boom Mower and John Deere	
01013	1418 deck mower	\$30
00005	Replace old Chevy S-10 pickup	\$26
01023	Replace 16' Boat	\$25
00001	Replace Radios for Compliance	\$172
02002	Replace 1992 Dodge Dakota	\$25
98523	Replace Material Storage Bldg.	\$27
98008	Rehabilitate South Ditch	\$500
98514	Replace 1972 bus	\$73
96001	Rehabilitate Corapeake/Myrtle Bridge	\$27
98511	Replace unreliable 1981 GMC dump truck	\$140
98519	Rehabilitate Shop Roof and Office space	\$105
99003	Education/Heritage Tourism Center – Chesapeake, VA	
33000	And Pasquotank Co., NC	\$10216
99008	Facility for Administration in Sunbury, NC	\$3700
99003	Education/Heritage Tourism Center – Suffolk, VA	
33000	And Gates, NC	\$9708
01017	Replace Feller-Buncher Shears	\$30
97205	Rehabilitate Portsmouth Ditch Road and Big Entry Bridge	\$335
01009	Replace Dodge Caravan	\$30
01005	Replace 1992 Dodge Ram 4x4, ¾ ton	\$25
01007	Replace 1998 Dodge Ram 4x4 extended cab	\$30
01006	Replace 1998 Dodge Dakota 4x4	\$25
02008	Replace Eager Beaver Trailer	\$40
02004	Replace FMO's 2000 Dodge Dakota	\$30
89092	Replace four concrete culverts and regravel parking lot at	·
00002	Washington Ditch	\$409
02003	Replace 2000 Chevy Blazer	\$30
98516	Replace 1977 Case bulldozer	\$140
98510	Replace 1976 International Truck and Portable Bridge	\$152
98515	Replace 1979 Caterpillar bulldozer	\$175
01012	Replace JD 4055 Farm Tractor	\$61
01001	Replace Ford dump truck	\$76
01011	Replace JD 6410 Farm Tractor	\$51
02001	Replace tiltbed truck	\$80
01018	Replace road grader	\$91
01010	Replace John Deere Excavator	\$172
01013	Replace John Deere 7610 Farm Tractor	\$76
99006	Replace Lake Drummond/East Ditch WCS	\$798
99007	Replace Weyerhaeuser North WCS	\$169
99005	Replace Jericho/Middle WCS	\$226
89093	Replace East and Williamson culverts	\$49
99103A	Repair leaking Jericho North WCS	\$74
99103B	Replace Williamson WCS and repair road	\$115
00002	Rehabilitate Hudnell, Jericho North, Camp and Cross Canal	
30002	Roads (16 miles)	\$1357
01014	Replace Hale trailer pump (fire fighting)	\$30
	Rehabilitate County Line Ditch Road (4 miles)	\$1357
00003	I Renabilitate Colinty Line Littch Road (4 miles)	7 1 7 7 /

01002	Replace Fire Engine	\$0
01004	Replace Jeep Cherokee	\$45
01015	Replace Full Track	\$60
01016	Replace fire plow	\$0
01020	Replace slip-on pumper	\$0
01022	Replace Rhino Deck Mower	\$9
01024	Replace Humpback Trailer pump	\$10
01025	Replace slip-on pumper 2	\$15
02005	Replace tracked personnel carrier 2	\$60
02006	Replace ATV	\$8
00001	Construct Restroom, trails, signs and canoe landing	\$385

Refuge Operating Needs System Great Dismal Swamp NWR July 3, 2003

Project	Staffing (FTE's)	Cost: Year 1 (1000's)	Cost: Annually Recurring (1000's)	Project Duration (years)
Determine Refuge Capacity for Black Bear Population	0	113	100	?
Develop Hydrologic Model to Manage Rare Forest Habitat Types	0	157	0	1
Develop and Distribute Refuge Brochures	0	23	6	?
Provide Attractive, Safe Access and Services to Refuge Visitors	3	300	175	15
Restore Rare Forest Habitat Types	1	147	82	15
Improve Visitor Facilities at the Lake Drummond Reservation	1	188	59	15
Improve Efficiency of Refuge Operations	1	192	113	15
Facility in Sunbury, NC	0	150	50	15
Develop Hydrologic Model to Manage Unique Forest Habitat Types	1	177	79	15
Partnership Operation of Natural Science Center in Chesapeake, VA	1	292	172	15
Educational/Heritage Tourism Center for Suffolk, VA and Gates, NC	1	168	82	15